

Concretum[®] Q-FLASH 2/20

Rapid-hardening concrete for airport pavements and motorways



Reconstruction of transport surfaces with short closure times

Concretum[®] Q-FLASH 2/20 is the newest generation of rapid-hardening concrete. The concrete can be produced, transported and processed like conventional concrete. Different to standard concrete, Concretum[®] Q-FLASH 2/20 achieves a compressive strength of 20 N/mm² just 2 hours after pouring. The concrete is also recyclable, without restrictions. The main application for use is reconstruction of transport surfaces with high traffic volumes for example, motorways, runways, taxiways and standing areas, among others. The rapid-hardening nature of Concretum[®] Q-FLASH 2/20 and its resulting rapid strength development allows these reconstructions to be carried out without interrupting traffic operations. Concretum[®] Q-FLASH 2/20 has been in use in international airports since 2004.

Standard features	Q-FLASH 2/20				
Exposure class	XC4, XD3, XF4				
Strength class	C50/60				
Consistency class	C0 to C2				
Maximum aggregate size	8 to 32 mm				
Aggregates	rounded / crushed				
Alkali-Aggregate-Reaction	resistant				

The concrete comprises pure mineral rapid-hardening cement, aggregate, water and admixtures. The admixtures serve to control the consistency and open time.

The concrete is ideally suited for rapid overnight concrete pavement renewal projects and conforms to the regional construction standards and guidance documents for airport constructions.

EU: It can be used for all exposure classes according to EN 206.

UK: Suitable for constructions according to "SPEC 33 - Pavement Quality Concrete for Airfields".

US: Conforms to ASTM C1157-17 and is suitable for constructions according to the FAA Advisory Circular "150/5370-10H - Standard Specifications for Construction of Airports".

Special qualities	Q-FLASH 2/20
$f_{c} > 20 \text{ N/mm}^{2}$	2 hours
$f_b > 3 \text{ N/mm}^2$	2 hours
Shrinkage $\epsilon_{_{SH91d}}$	approx0.20‰
Heat of hydration	210 J/g (equivalent to low heat cement)
Moisture < 4 CM-%	3 hours



Area of application

Concretum[®] Q-FLASH 2/20 is used when replacing concrete traffic surfaces which are in use. Experienced concrete paving specialists with the necessary equipment can process and pour this concrete to the required quality. The concrete is produced in a concrete plant, transported to the construction site and poured there by the construction company. Concretum supports the concrete plant and the construction company during production and pouring, providing the benefit of Concretum's many years of experience. This also includes adjustments to regional and project-specific features. Depending on the size of the project and stage, the concrete is poured as follows:

Pouring with slipform paver



Surface

Broom finish

Exposed aggregate finish





Manual pouring



Post-treatment

Curing compound

Insulation mats





Application areas in airports



Construction process for airports

	23:00	00	:00	01:00	02:00	03:0	00 04	:00 05	:00	06:00
Fleet provision										
Runway closure by air traffic control Site equipment, start of construction	-									-
Break-up & removal of the existing slabs Cleaning, placing tie bars & dowels Assembly & commissioning of slipform paver										
Pouring with slipform paver			-							
Curing, joint cutting, cleaning										
Quality control (surface compressive strength)										
Approval of runway by air traffic control										+

The following marginal conditions apply to the adjacent construction process:

- Concrete plant in direct proximity (on site concrete plant)

 Using slipform paver
Taking into account these marginal conditions and a closure period of approx. 7 hours, a stage performance of 1,000 m² per night can be achieved. The closure times can be reduced further by adjusting the size of the stages.

References

Zurich Airport (Switzerland)



Highway A71 near Erfurt (Germany)



Vienna Airport (Austria)



Frankfurt Airport (Germany)





Concretum Construction Science AG

Steinackerstrasse 56 CH-8302 Kloten Switzerland

www.concretum.com info@concretum.com +41 44 445 13 46